Charles Batchelor Notebook, Cat. 1234

This notebook was used between November 1879 and November 1895. All of the entries are by Charles Batchelor. The name of Martin N. Force appears occasionally as a witness. The material relates primarily to the electric light, the telephone, electric traction, and chemical and metallurgical experiments. There are some entries pertaining to spiritualism and to unusual phenomena. Included also are lists of books read by Batchelor and a list of electric light articles and patents from the 1840s through the 1880s. An index to correspondence, probably dating from the 1890s, can be found at the end of the book. The book contains 109 pages, numbered by an archivist. There is one unnumbered page between pages 86 and 87.

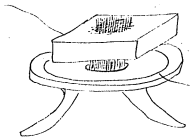
Blank pages not filmed: 51, 103-109.

1.

Experiments and
Notes relating to a
New System of Telephony
Devised by me this
day November 1st 1879

Chas Batchelor
Menlo Park
N.J.

1 Make a transmitter to work on the following principle :-



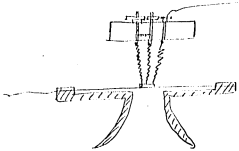
2 pieces of gauze of about 150 mesh one on each side of a piece of metal has its mesh all filled with metal pins which project out of the bottom and rest on a platina surface of a diaphragm - When diaphragm is vibrated it will have greater or less resistance owing to the inertia of the little rods —

Test resistance of transmitter and make coil to suit -

Nov. 1st 1879

Chas Batchelor
Martin A Force

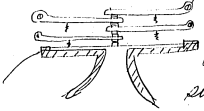
2. Make Transmitter of Platinum springs which open and close by action of diaphragm so :-



Diaphragm vibrating opens and closes the ~~transmitter~~ springs giving more or less resistance — Adjustable springs — Make one to suit

Nov 1st 1879 Chas Batchelor
Martin M Fox

3. Make Transmitter so :-



Variation of contact on purely metallic surfaces sufficient to give good talking — I have frequently got very good talking (that is I mean have got some words very distinct,) with only one point, but

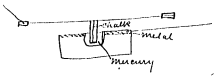
the adjustment is too fine and cannot be kept — with a number of points it can I'm sure

Nov 1st 1849 Chas Batchelor
Martin A Foran

---

4 Receiver —

an idea for a receiver is as follows: —



a diaphragm has on its centre a cylinder of chalk which has a wire through with slate in end, this rests in mercury which connects with ring of metal at top of cup — the current has to pass through the mercury and in so doing the mercury makes a movement this will raise and lower the chalk with sufficient force to vibrate the diaphragm

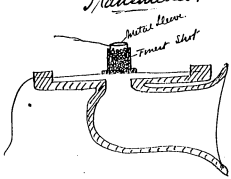
It may be that some other substance may do better than chalk – probably something with a rougher surface

Nov 1st 1879 — Chas Batchelor
Martin M Ford

Nov. 17th 1879

5

Transmitter.

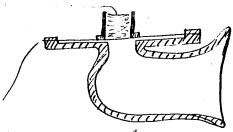


Talk in side – Cup full of fine shot on diaphragm top of cup lined with metal from which the connection is taken off.

Vibration of diaphragm disturbs shot and gives variation of resistance –

Chas Batchelor

6 Transmitter.



Diaphragm vibrates and lifts a number of copper wires laid across each other — these follow the diaphragm down by gravity

Nov 14th 1879

Chas Batchelor.
Martin M Foote

---

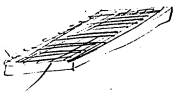
7 Transmitter

Make a transmitter with a ~~button~~ number of discs of fine mesh gauze.

Nov 14th 1879

Chas Batchelor
Martin M Foote

8 Transmitter

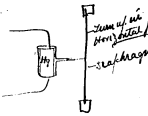


Fine wires stretched across a box both ways and adjusted so that they make slight contact — by talking you will make them touch more or less.

Nov 14th 1879 Chas Batchelor
Martin M Ford

---

9 Receiver

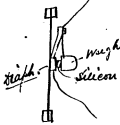


When current passes through a globule mercury it tends to widen out the other way — this motion in a small tube could be connected with a diaphragm for to get talking

Nov 14th 1879 Chas Batchelor
Martin M Ford

10

Transmitter.



Graphitoidal Silicon conducts electricity therefore make an inertia telephone of it as in sketch — Amorphous Silicon won't do as it is non conductor —

Nov 14th 1879

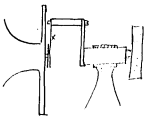
Chas A Bentchelor —
Witness M. Force

10

Telephone. April 4th 1880

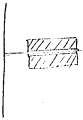
About a year ago I made an experiment where I had a platina plate laying loosely on a platina faced button, and thinking that I had a carbon button between I got good talking by a fine adjustment. Noticing a peculiar metallic ring to the talking I took it apart and found that I had nothing but the two metallic plates touching each other — I then examined it carefully to see if there was any dirt between the plates but could find none — Martin Force was trying this experiment with me — The time we tried this was about April 1879 I know it because it was between the time C P Edison went away

and E. H. Johnson going to England
now make a transmitter this way:-



x Adjustable platina foil against disc or diaphragm.
also cut foil in strips

Chas Batchelor.



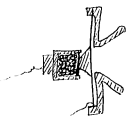
Transmitter for telephones

Oct. 4th 1880

Chas Batchelor

Telephone receiver

In Aug 1877 (20th). I made an instrument for a transmitter from T.A.E.'s design in which we used silk pieces coated by graphite.

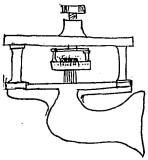


Whilst experimenting with this instrument I discovered that we could use this instrument as a receiver and we did so Adams and myself talked with it at the time perfectly. T.A.E. was present and knows that we got what was said although I think it was too low for him to hear — Since that time I showed it Mr Butler — previous to Prescott's book being written (his edition of 1879)

Oct. 4th 1880

Chas Batchelor

Telephone

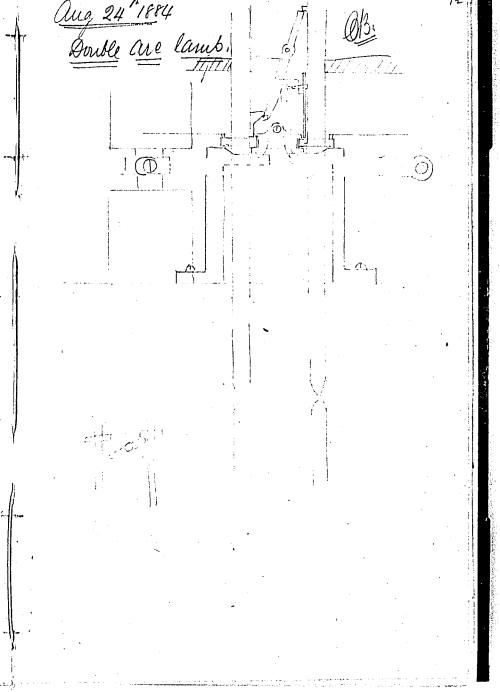


Make a transmitter with wires in shape of a long legged U so:- ∩ and put about 50 of these so that the long end rests on the diaphragm and the short end rest in a cup of mercury which is adjustable.

Chas Batchelor
Apl. 16th 1880

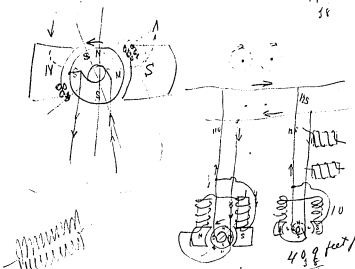
Aug 24th 1884

Double arc lamb.



Oct 14 1886.

19 ohm
58



49 feet per ohm

66
200
75 2 01
1.598

11.5 mean dia
46
46.0
115
505
161.10

36 / 1 5 5 / 1 2 9 5 / 4 9 2 turn

3 / 1.5 5 4 / 5 1 8 1 ampere

12
108
12
11½ average dia

+ 38 / 4 / 42 / 1 2 8 | 3 amperes passing

·75 / 1 2 8 0 / 2 0 6 lamps
9 5 6
9 5 6
1 = 66 / 1 4 0 0 / 0.52 ohm.
7
2 3 3 0
2 3 3
7 6

5 1 6 1
15.5 5 3 amperes shunting magnet
6600 in armature.

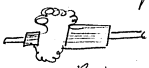
Oct 17th 1886.

Commutators.

Commutator of a block of soapstone & cut out with cutter – Let the bars in & bind down with wire on mica –

Another way would be to make a mould & screw all the bars together in & afterwards mould up with plaster & bind down & turn off.

Edison's non sparker Nov 4th 1886 15



#4 armature
50 blocks
Resist ·044 ohms

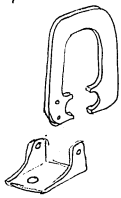
Resist of each loop ·0035

Brush made to touch three bars —
If only one loop was short circuited then
·0035 + ·044 or the current would discharge
in 13 times greater

Now is the counter of our discontent

Nov. 6th 1886.

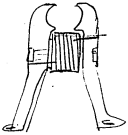
Experiment —

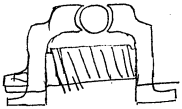


Cast 4 plates like this $\frac{1}{4}''$ and mount them on an armature — Wind wire around each leg & take readings from the armature — Then dismount and send the plates to an annealing furnace to be made malleable after which put on and try again

OD

N
N
S
S





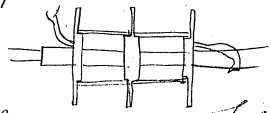
Nov 25th 1885

1 Does the armature have an attraction on the wire when there is a heavy load on armature?-

2. Why does an armature run in same direction as a motor when speed and not reject light on two in multiplex?

9. A dynamo running slowly with no field & no brushes on — When brushes on the field is on. Brushes short circuits & set on, the armature stops & rescue — Why?

Experiment Nov 20 1886



Make armature hollow & put in pipes for air -

Standard of M. =
that number of lines of force
that will give 1 volt in 1 ~~foot~~
wire in one second
What standard have we on our
machines

On a L. effective length 11"
Outside Dia. 10"
Inside " 9.687"

80% effective field

Diameter 74
Res. .038 ohm
1200 Rev.
1 wire 2 turn wound

Speed of cutting = 19.687" ÷ 2 × 3.14 × ~~1200~~ 20/60
~~60~~ 9.84 × 3.14 × 20/12 = 5.146' per second

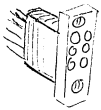
L. = 22" × (74 × 80%) × 2 = 44 × 59.2 = 2604.8 or 217° per
~~217°~~ × 5.146 ~~× 110~~ V/M
110

0.625
11
6.875

74 | 16.8 | 0.21
74
72.0
74'12

80%
5.146
59.2
44
2604.8
5.146
97.864

New connections Dec. 13th 1886



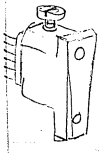
1 Wires brought through and rivetted – no solder

2

Wires from the coil lapped together + only half the number of wires led into the cup. no solder

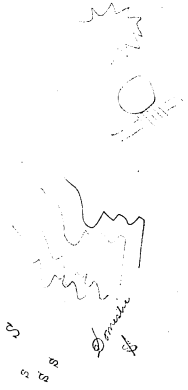
3

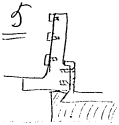
Still not pure copper and slip it on the wires – Cup to be made as a clamp 20/– No solder



4 Wire for cup bent 50/–

the ends are bent up to the shape of the armature wires thus round to make good contact



5 

Wire turned up to get a long contact on the cup

6 Fuse the wires together with the 'arc' – If the oxyclesis too much then use quantity current + fuse where bad contact is made.

7

Make a hardened steel dimmy and hammer the wires well together in it to give it shape 1 & 2 – this will require least solder

Feb 5 1887

Aluminium Electroplating —

Richards says it succeeds only by a molten bath of anhydrous Al^2Cl^6. 2 NaCl melting at 165°C (329F) but metal is a powder mixed with NaCl.

Gore says:- he has coated with Al from Al^2Cl^6 of a weak current —

Jan 1888.

Experiments to be tried

1 Take a small piece steel and heat it by electricity in a strong magnetic field –

a. Plunge it in water whilst still in the influence of the lines of force

b. Let it cool off and note any difference in grain, hardness, tensile strength etc.

---

2. Take the different wrought irons and see if

a. heating & plunging in water in the field makes any difference

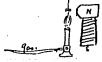
b. The same operation repeated many times

c Try same operation with Cast iron

---

3 Iron loses its magnetism at a red heat. There may be some metals that become magnetic at a temperature between ordinary and a red heat. Try all metals – If we heat them by current the magnet would attract the wire due to the current in it

Try this without current by using very small pieces & placing them suspended in a bunsen flame and regulate gas for different heats.



Magnetism Jan 1888.

4 When Edison dynamo is running its resistance of magnet increases by heat — It may be that the magnetism is also reduced by this heat in proportion as it is heated

---

New Compound

5 One atom Sulphate Barium fused with one atom Chloride Barium makes a white translucent mass. With 2 atoms Sulphate it resembles marble. Perhaps this could be done + mixed with a large quantity of fine white sea sand + make a cheap new material

---

6. Alloys

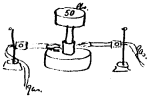
Cobalt + Antimony Gmelin Vol 5 359
Cobalt + Zinc

1 part Cobalt powder
2 " pulv. Antimony } heated together unite with incandescence + form an iron grey mass which acquires metallic lustre by pressure

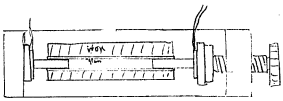
1 Cobalt powder
2 Zinc } heated, emit red light — + make grey spongy compound which takes lustre by pressure

over.

Make an apparatus to put pressure on these during the heating operation & see what effect it would have on the alloy—



Also heat them in closed iron tube which are entirely full of the mixture & see what effect it would have.



7 New Compound Feb 1888.

Mix Plaster Paris with Alum water and see if it hardens it like marble

8 Hardening Metals :-

Common steel Heat + plunge in Common Salt

9 Common Steel - Heat + plunge in

	Cor	Ano	Chromium	
10		33	56	79	~~Bichromate of Potash~~
11		34	57	80	Cyanide of Potash
12		35	58	81	Hydrofluoric Acid
13		36	59	82	Chloride Ammonium
14		37	60	83	Acetic acid
15		38	61	84	Citric acid
16		39	62	85	Bromic "
17		40	63	86	Carbolic "
18		41	64	87	Gallic "
19		42	65	88	~~Hydrochloric acid~~
20		43	66	89	Hydrocyanic "
21		44	67	90	Lactic acid
22		45	68	91	Malic "
23		46	69	92	Nitric "
24		47	70	93	Nitro muriatic acid
25		48	71	94	Oxalic acid
26		49	72	95	Phosphoric acid
27		50	73	96	Succinic acid
28		51	74	97	Tannic acid

Feb 1865.

	Cantan	Copper	Wrain	
29	52	75	98	Tartaric acid
30	53	76	99	Uric acid
31	54	77	100	Vanadic acid
32	55	78	101	Fluoritic acid

102. Alloys. Wax dc. VIII 1264

Aluminium & Manganese alloy Mn^3Al
Scratches glass — fracture like amalgamated
Zinc — try it for cutting tools

103 to 126

Take nickel wire and heat and
plunge into same substances as
Exp. No. 101

124. Iron in Nitric Acid — Phil Mag. Jan. 3. Feb. 53
Schonbein & Faraday's experiments
try them & see if anything can be
made out of it

125. Magnetism —
Get flat bottles & put between the
poles of a magnet with different
substances in each & see what
action it has on them —

29. Feb 1888.

129 Voltmeter

Seubel proposed a voltmeter made of a spool of solenoid with an iron spiral in it — Traction pulls in the spiral & this works a scale.

Try it this way.

A spiral fastened by the middle to a brass rod A with a hole through it — then put in the solenoid and fastened — both ends are drawn in by solenoid and the resultant of both movements is shown at B

130. Action of Steam Pressure on

131 Bamboo -

132 Hard rubber.

133 Horn

134 Ivory

135 Vegetable ivory

136 Slate

137 Take an Edison Dynamo and set on full load & take volts — Throw off loads (always leaving on the short load (amps) varying from full to 0 load & every variation & take volts &c

See if the variation of volts is not out of all proportion to the theoretical drop in the armature —

138. Action of Steam at 80°. March 3 1888.
on
Cork.

139 Data on Soft rubber.

140 Artificial Caoutchouc
Mix some Linseed oil 100
Chloride Sulphur 20.
Make some & investigate

141 New Compound.
Linseed Oil 1 part
Comm. Nitric Acid 2 parts in 4 times its bulk of water make a tough elastic resin —
Perhaps this can be mixed with sawdust & pressed & make wooden ornaments

March 4 1888

142. Try same with thin solution of Glue

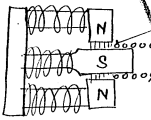
143 Try 141 with Kaolin & Pressure

144 Red Coloring matter –
Make some Brazilein – Watts dic. Vol VIII pg 348. – See whether it can or is being used.

145 Electric Meter. Aluminium
A voltmeter of Pt + Al. only lets the current pass when the H is evolved at the Al pole – perhaps this would make an alternating current meter if it is quick enough. – Try it.

146. Try a voltmeter of Pt + Al & blow air in to see if it acts the same or whether it is oxide on the plate

147. Magnetism



a Solenoid with a strong current in it – When current is put on will the magnet pull the Solenoid forward to centre of line of force – If so a powerfull reciprocating motion can be made

See Page 34

148. Magnetism

Find a magnet this shape – See where the poles are then slip X through so that it sticks out at other end – See if it has opposite pole

149. Magnetism

Make magnet like this and see how strong it can be made

March 10 1888

150 Dynamo.

Difference in quality of Iron for magnetism

Take a small dynamo & try for magnets

first

~~Wro~~ Cast iron magnets as against wrought iron but square section against circular

then

Make a series of cast iron plates ¼ thick like sketch of same section as above & same winding

Then take them apart & anneal them & make them malleable & try them again

---

151 Magnetism

~~Put a current through a piece of iron spiral and see if the spiral is magnetic & with what current.~~ See 1873 C.S.

---

152. Magnetism Walk VIII 1250

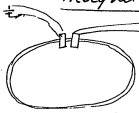
Steam at 5 or 6 at. passed through a copper tube of 2 or 3 mm thick coiled round an iron cylinder the

iron becomes magnetic remains as long as it is in — Lommai Amplt Kender 80–100 Mauvenné says it is thermo-electric current that magnetizes. — Read the article & see if he proves it a thermo current — If not make the experiment & enclose the whole in a steam jacket & keep same temperature & see if the current is still there

— Steam jacket to keep all at same temperature

---

153 Magnetic induction March 12 1888



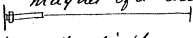
Take two telephones spools and a heavy iron wire (straight & hooked) and see what effect distance has on the other when a battery current is put on one that will saturate the iron that it covers if it was cut off.

---

154. Induction in Telephones

It occurs to me that noises by induction from other lines in telephones are essentially very much weaker than the noises

made by the generation of current on the line by talking that some method ought to be devised to reduce the former to zero whilst not very materially reducing the latter — Attach a long wire to the magnet of a receiver and carry it



a suitable distance to another diaphragm — Perhaps the weak induction sounds will not transmit longitudinally in the wire so well as those directly generated in the wire

---

155 May ~~Stet~~ 12 1888

Life of Lamps.

Take an ordinary Edison Lamp and coat it ½" thick with plaster of paris. Take life —

---

156 Lamp life May 1888

Enclose a lamp in a casing of pure Plaster of Paris & see if the effect is to shorten the life

June 1st 1888.

157. Antifriction metal

See if glass can be mixed in any quantity with lead & poured for a bearing —

June — 1888.

158. Aluminium — Absorption of a compound of Iodine from Iodic acid by immersion — Nature Vol 29 p 254 A sheet of Al. immersed in 17.5 gr. pure Iodic acid + 3½ g distilled water absorbs 16 per cent of foreign substance & changes somewhat its nature —

---

159 Telephone — Phil Trans 540 f. Vol 23 Series 5. Fae says that Antimony and Cobalt alter their resistance when brought into the Mag. field — Investigate this and see whether it can be arranged to get enough for working a telephone in some way

Sept 14 1888.

160 Torsion - See if ~~a current of Electricity~~ Magnetism is generated by a bar of iron under heavy torsion also under tensile strain

---

161 Lamp extinguisher Nov 12 1889.

a good patent would be a lamp ext. for Kerosene lamps - It must automatically ext. whether the lamp is broken or only knocked over -

---

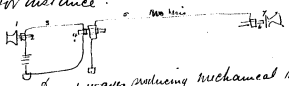
162. A simple method of getting Dec 1889. fresh water from Sea water so that ships do not have to carry so much but can always get it.

---

163. Moulds for casting brass or iron that can be used over & over again

164 Telephone. Dec. 1890.

In telephoning the loudness of the received message is many times lower than the talking at the other end — This is undoubtedly due in a great measure to the different transformations of the energy so for instance:



1 Sound waves producing mechanical vibration
2 Variation of magnetism
3 Induced Electricity
4 Magnetism
5 Induced Electricity
6 Magnetism
7 Mechanical motion of diaphragm

So if we started with an initial 100 that only 10% in each transformation

1–2 = 90 " 2–3 = 81, 3–4 729 " 4–5 65.61 —
5–6 = 59.05 " 6–7 53.15 % of original —

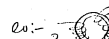
Now in the secondary circuit ≈ 5 the resis of the coil is generally 250 ohm & resis of receiver about 50 so. only $\frac{1}{4}$ of the energy is at receiver

$53.15\% \times \frac{1}{4} = \underline{13.79\%}$ of total

or taking 59.05 at 5–$\frac{1}{4}$ gives these = 14.76, 10% loss from 6–7

13.28 of total

This might be made better by making first: a

using induction coil as:-  S & then by making receiver equal resistance to the induction coil so as to get $\frac{1}{2}$ instead of $\frac{1}{4}$ of the energy.

suppose E.M.F in Sec. was 100 then in first case.

$\frac{100}{150+50} = .5$ Amp. $= \frac{50}{100}$ Va. $= 12.5$ Va on receiver

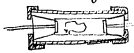
$\frac{100}{150+150} = .33$ Amp $= 33$ Va $= 16.5$ Va on rec.

---

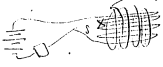
165. A Shark during the freezing of water by Oliver Phil Trans. Vol 4 Series 3 p. 156 Try this & see if can find out what it is caused by Dec 1890

---

166. Instrument for observing decomposition by high voltage —



---

167. Measure the resistance of iron core coils up to at X & then mag.  N reduce it by Z current & see if any difference in resistance Dec 1890 —

May 1891

168. Cut a section of Lebanon wood with razor and mount for Microscope

169 Grind slate & 100 meal + see if it can be moulded with cement about
95 Slate + 5 cement

Feb 16 1893

170 Get bars ¼ □ + 3" long of

7 Antimony + 3 of iron —
1 Antimony + 1 lead.
1 " + 4 "
1 " + 2 nickel
1 " 9 tin
6 " 43 Zinc
6 " 33 "
1 " 1 Bismuth

Offer

July 1 1893

171 Collect some hundreds of lightning cases & see what deductions it is possible to make from them ——

July 13 1893

172. Collect the compositions that have been published of #

Different woods
" leaves of trees & seaweeds
" ashes of woods " "
" " " leaves
" fruits
" Kernels and shells of fruits

Fire escape Sept 1893

173 It seems is easy to make an apparatus that will lower loads at a uniform speed that it seems to me such a one ought to be applied to fire escapes — It should automatically lower whenever one person gets on & should go as quicker if more are on —

174 Sec. 151 Dec. 11. 1893.

Iron spiral with current sent through it is magnetic

175 Expansion Engine Dec 11 1893

Metals expand between 1° + 100° C from .0009 Flat. to .0029 Cast Lead — With 2 in gas pipe + 20 feet long you would have a movement of about 3/8" with a number or 2 you can get with leverage about 1½" movement — It is however too slow. I took a hard rubber tube 30" long + measured it — then put water in it about 100° + it lengthened 1/16" but it took over a minute after I threw the water out + blew in it before I came back — This was about .0021 or about same as Cast Aluminum

176 Mineral Agaric (Agaricus Mineralis Watts 1 62.) — it kind of fossil meal — is really hydrated Silicate of Magnesia with lime + Alumina (Query how much) + a small quantity of iron — this might be good for making furnace linings — Found in Germany, look it up + see what it is used for.

147. Album Græcum (Watts 1 64) this is dog manure & it contains 79 per cent of phosphate of calcium – I have seen this being collected but I did not know what for –

Dec 1893.

148 Tellurium in quantity, Dec 1893

Mineral called Ammiolite a red earthy mass found in Chili contains: –

36·5	Antimony
14·8	Tellurium
12·2	Copper
22·2	Mercury
2·5	Quartz.

Query: How much to know of this? Besides Oxygen c

149. Chlorodracmyl. – A thick oil 42·6% Carbon 3·4% H. made by heating Oil of Tansagon with Alcoholic Potash – Watts 1 p. 299 get some to see what it is.

Dec 1893.

150. Opium – Sticky yellow Make some – Watts Vol 1 300.

Dec 1893.

151 Asafetida Resin of Asafetida –

70·2	Carbon
7·6	H.
22·2	O.
100·0	

Dec 1893

extracted by Alcohol. Watts 1 p. 414.

182. Table of Ash Compositions See 1893
Liebig & Kopp's Jahresbericht – für Chemie 1847-52
Ure's Dictionary (New) p 212

---

183. Bitumen (Asphalt)
Asphalt at 250° gives off Petroleum & residue is Asphaltene $C^{20}H^{32}O^{?}$

---

184. Sea Starwort – Aster Tripolium –
Watt Vol 1 429. (See 1893) Yields from ash about 68% Common salt. – Suppose this is Common Salt hay. Salt Hay –
Well two men cuts out & cut & dry about 5 tons = when dried pay 3 tons or 6000 lb.
Ash 8 & 10% – 600 lb. & 68% of the wood 408 lb salt cost roughly 1/3 & process.
Query what price salt?

---

185 Atacamite A native Oxychloride of Copper
Look this up & find out what percentage of Cu & where it comes from & what price delivered
It dissolves easily & completely in acids

---

186. Oil of Ahamantin – Watt Vol 1 430
from Root and Seeds of Ahamanta oreoselinum –
has the same formula as Oil of Turpentine $C^{10}H^{16}$
Bergamot Oil is a mixture of two oils. the more volatile of $C^{10}H^{16}$ which is isomeric with Turpentine Oil & Oil of Amara $C^{10}H^{16}O$

189. Canada Balsam contains a small % say about 6% of caoutchouc — Is this quantity sufficient to try to save it — Watts 1 492. Dec 1893.

188. Copper. Barnhardt's. Supposed Cu + Fe.
2 Cu_2S Fe_2S_3. found in a mine in Barnhardt's land + other localities in N.C. Comp.

190. Bindlime. Made from the middle bark of the holly. Boiled for 8 hrs in water till it is soft then laid in heaps in pits in the ground + covered with stones, the water previously drained from it for 2 or 3 weeks to ferment — it is then pounded to a paste washed in running water + kneaded till free from extraneous matter — then left 4 or 5 days in earthen vessels to ferment + purify itself when it is fit for use —
It may be made from Mistletoe, Young elder, etc — It is glutinous, stringy, + tenacious resembling in smell linseed oil — It dries in the air + becomes brittle — This might be good for some compound. Watts. Vol 1. 590 Dec 1893

190. Bismuth — What is the consumption of Bismuth in this country? Where does it come from? What is its price? Are there any ores of B in this country? If so are they worked? Process very simple for reduction — would it pay to start a business in producing alloys of Bismuth?

A native Arsenide of (Bismuth 3%) at. Kalmbaum W. Marienberg

Trisulphide B. Bi^2S^3 bismuth glance or bismuthine in Cumberland & Cornwall, Saxony, Bastnäs Sweden, & at Haddam Ct. associated with Chrysoberyl.

Grünauite. Jaquite. A sulphide of B & Ni with quartz & Copper pyrites at Grünau in Jaqu Altenkirchen 14.11 Bi 40.65 Ni.

Bismuth ochre. Trioxide Bi^2O^3 86.4%. Fe^2O^3 5.1% – Co^2 4.1% – H_2O 3.4%. Schneeberg Saxony – Joachimsthal Bohemia, & with native gold Beresof in Siberia

Bismuth Silver – Schapbach in Baden
" Mansfield Thuringia
x 27% Bi 33 Pb – 16 Ag 4.3 Fe 0.9 Cu 16.3 S.
" San Antonio near Copiapo Chili.
60.1% Ag – 10.1% Bi – 7.8 Cu – 2.8 As – 19.2 gangue.

191 Iodine —

Dec 1893. 50

1 The Geneseh Water Spring of Java has in 100 grams 0.0138 grams of Sodium iodide

2 The Calcium phosphate beds of the Dept. of Lot & Garonne Contain sufficient I. to give violet vapors when heated with Sulph. Acid —

3 The Sodium Nitrate of Tarapaca in Peru has in mother liquors ~~of the salt~~ 2.3 to 4.8 grams in a litre of iodine

4 Soualiadt says iodine exists in sea water as Calcium iodate & a recoverable iodine Chlorization with only 100 cc of the water 250,000 Salt Spanish produces 1 part Calc. iodate so 1 Cub. Sea mile would give 14000 lbs of Calcium iodate or 11071 lbs of iodine — 1 part of iodine in 336,610 Sea water

5 Price of Iodine resublimed 30-33 ¢ per Oz. or about $5 per lb.

6 1 Cub. Sea Mile 147.197.952.000 Cu feet = gallons.

= $\frac{15}{100,000}$ lbs Iodine per C foot = $\frac{15}{1000}$ % Cont

pumping at 1000 gall per min it would take 824,000 days.

" " 1000 g. per min 180,000 C ft per day. $135 - 27th Iod.

CHAS. BATCHELOR.

192 Jan 1894

Phenomenon remarkable.
Polarization of light through crystals of Chlorammate of Potassium
Math. Vol. 1 906.

193. Cellulose
Stones of the date contain 40 % Cellulose

194 What's Halley's Comet 1986? & when does it appear?

195 Look up Eocene - Miocene - Pliocene - Mammals - Reptiles - Saurian - Secondary Tertiary - fluviatile -

196 Tellurium
Herrerite, Altarron, Mexico - 35.58 Tell.
12.30 Nickel ox - 31.86 CO_2

197. What is the extent of increase of population in the different countries & how long would it take to so populate the world that the struggle for existence would be as great in each country as it is at present in China?

May 1894

197. What is estimated amount of Coal & how long will it take it to be used up?

198. What is estimated amount of heat in the Sun & what is yearly loss? How long will it take to reduce temperature 26 deg so that no human being can exist?

199. What is estimated solid content of sea below water surface & land above? How long will it take to erode it all to about 100 feet above sea level?

200. What is estimated amount of Iron tin, lead, & copper & at the rate they are being used how long will they last?

201. What is estimated amount of low grades of above metals & how long would they last if processes were to be found for working them?

202. In Ency. Brit. note death of
Brown Sequard, Prest Garnet. J. G. Blaine
Sir R. Burton — Helmholtz. Darwin.
Huxley. Tyndall.

203 Waste of materials June 1894 54

When machinery is being oiled there is a very large percentage of waste, fine oil cups, but not expensive like 'sight feeds' ought to be designed

---

204 Silk industry

Write to Woman's Silk Culture Assn of Philadelphia —

Kansas State silk station, Peabody, Kan — State Board of Silk Culture San Francisco — Agricultural Dept at Washington — Also see last Census on Silk Culture — for progress & value of Silk Culture in the U.S. at present time 1894

---

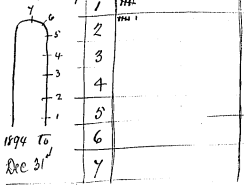
205 Soda

What is the Le Blanc process?

" " " Solvay "

What are the Chemicals used in both? & what are the byproducts? What are prices of each? & market price of product? Figure out cost & gain in each case —

206. Lamp. Edison 16 c 115 Volt 32 c. 115 V.



July 1894 to Dec 31

Aug 1894

20%.

Killed by Lightning.

During the storm yesterday afternoon Bernard Feeney, the 18-year-old son of Michael Feeney of Avenue D and Nineteenth street, Bayonne, took refuge from the rain under some trees in Kelly's woods. While there he was struck and killed by lightning. Five small burns the size of a quarter were the only marks on the body, though his clothing was torn into strips, and the soles alone remained of his shoes.

208. Salt. Aug 1894

Ashes of leaves & stalks of Nymphea alba have about 30% Chloride of Sodium See Mats Vol 4 169.

209 Mose is Glaucoma OK the 'Bannat'?

210 Write to Acheson for samples of his Carborundum OK.

Aug 1894 567

211 Get World's Fair Reports on: —
1 Chemical processes
2 Machinery
3 mining reports
4

---

212 Write Sec'y of State of U.S. for any printed matter he has on Stock Co. Sept 1894

---

213 Railroads Nov 1894

Put Railroads on map.
~~Europ~~ N America — Quebec to Lake St John
Africa — Beira to Mashonaland
S America
Mch 1895 Congo State Railrd on large map.

---

214 ~~Look up Ujina a naval port in Japan and Hirohima 4 miles from it + see what names on my Asia correspond to their~~
~~Hirohima is old Fuchima in Nippon~~

---

215 Get report on Cyprus & see if anything to put on map. Railroads etc

---

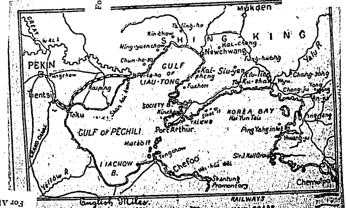
216 ~~Gazetteer says Hirohima is in the island of Honda — Mine is not what she knows~~
~~OK Honda is Nippon~~

217 Read :— 'Lacon' or many things in few words. 2 Vols 1823. Rev C.C. Colton
— 'Beauties, harmonies & sublimities of Nature #2 Chas Bucke (previous to 1873)
— Glimpses of unfamiliar Japan by Lafcadio Hearn 2 Vols 1894 Houghton Mifflin & Co —
— 'The Vagabond' about 1824 (novel) Geo Walker #3
— 'Modern Philosophers' by Eliza Hamilton #4
— The Tablet of Memory Philip Luckombe 1793 #5
— Phoenix Brittanicus J. Morgan 1732 — #6

218 Central Soudan RR from Algeria — Nov 1894
Col Flatters's expedition Massacred by the Tauregs, at Haiser south of Assinua
Where are these places?

219. In Herald today, Railroad goes to Pei.ta.ho in my map it goes to Lung Chow which is not in same place by any means — Find out which is right & make map right if RR has to be extended —

For Aldern



Herald Nov 23 1894

MAP OF SEAT OF THE WAR IN THE EAST.

Showing the route of Field Marshal Count Oyama, who leaving a force of 10,000 men to ... Port Arthur, is advancing northward to Niuchwang, his ultimate destination being ...

For Aldern

For Aldern

220 Electric Light Nov 1892 58
See Ill London News Jan 1849 p. 58

221 Genius

Genius ..... Sense adapted to uncommon circumstances. attributes to Duke of Wellington

Genius is the carrying of the feelings of youth into the wisdom of maturity & age — Coleridge

Newton says his genius consists in having more patience than other men —

— Fusion of passion in thought (Who?)

---

222. NR Speed Nov. 14. 1894

Yorkshire	8.41 . 20	running
Croton	8.52 . 28	"
Yonkers.	9.15 . 20	"

---

223. Gazetteer

Ogden Mine changed to Edison Mf.

---

224 Photography

For Photos get Carbutt's Orthochromatic plates about $1.50 per doz

---

226 Aregrate for Sanguenay Cottage

Gracey & Co. 208 Water Street

1 Set Bricks for Fireplace $8.

1. Carlock.

226 Map.
N Y State map 6 miles per inch
about 60 x 60

227. Write Secy of State for pamphlets
& Companies.

228. Photos of Locomotives
A. P. Yates Syracuse seed
Loco 999. & De Witt Clair

229 Novels.
Get M. Crawfords OK. Dec 1894
W Isaacs

230 Books Wanted Lyell. Nov 1894
American Mech. Engineer Vols 1. 2. 3. 4.
English Mechanic Vols. 24 to 49
Society of Arts London 38 and afterwards
Nature. London Vol 40 – 46 and after
Journal of Coe Lel Eng. Vol 1. 2. 3. & 4.
N.Y. Electrical Engineer Vol 1. 9. & 10.
13 & afterwards
Amr. Loc. Elect. Eng. Vol 1. 2. 3. 9.

231 Book to read #8
Report on Spiritualism - Committee
of the Dialectical Soc. London 1871

232 Rev Wallace's ~~x~~ #9
~~x Miracles & Modern Spiritualism — Psychography & Spirit Identity x~~
~~by Mr. A. Owen~~
~~Dale Owen "Footfalls on the Boundary of another World"~~ #10

233. Coins Nov. 1894

U.S. 1¢ pieces wanted. 1800. 1801. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 66. 69. 70. 71. 77. 78.

U.S. 5¢ pieces wanted 1881. 80. 79. 78. 77. 75. 74. 73. 72. 71. 66. 65. 64. 63. 62. 61. 60 ....

U.S. 2¢ pieces wanted 1894. 93. 92. 91. 90. 89. 88. 87. 86. 85. 84. 83. 82. 81. 80.

234 Photographs unmounted Wanted Nov 1894 61

Alfred Russell Wallace. Cabanel
Henry Bessemer Benj Constant
Bougereau Alex Dumas
Gerome " " Jr.
Vibert Meissonier
Rosa Bonheur Detaille
Tesla Crookes FRS Geo Stephenson
Lewis Wick Napoleon Chas XII
Bouguet Max O'Rell Edison
Gen Grant De Lesseps Jas B Eads
Sir W. Thompson Tolstoi Massart
R Louis Stevenson Helmholtz Thackeray
Conan Doyle. Thos Paine Werner Siemens
Ingersoll Yamagata Li Hung Chang
Longanicy Cobden John Bright
J. Ericson Herbert Spencer Sir J. Lubbock
Magellan Columbus Shakespeare.
Rich. A. Proctor Lord Raleigh Sir H. Roscoe
Sir Wm Siemens John Tyndall Sir S Baker
Sir R Alcock J. A. Froude. Lionel Lynch Beale FRS
Isaac Lowthian Bell Thos Brassey Sir Rich. Burton
Rich. John W Colenso Moncure D Conway. Wm Fairbairn
~~Helmholtz~~ Huxley Justin McCarthy

235 Read.
Recollections of Past life #17 Sir H. Holland
1872 Presd Royal Inst. 9 K Dec 1894

236. Books to read #18 Dec 10 1894
A Guide to the study of English Coins
from the Conquest to present time 1880
Henry Wm Humphey — Bell & Son London

237 Dec 11 1894

MICROSCOPICAL RESEARCH has proved that the pores of wood invite the passage of moisture in the direction of the timber's growth, but repel it in the opposite direction. This accounts for a phenomenon which is often noticed, and which puzzles a good many people—namely, why two pieces of timber sawn from the same section of a tree sometimes appear to possess very variable degrees of durability. If the wood, say of a gate post, is placed right end up, the moisture of the soil will affect it, but the rain falling on the top will do little harm; if, on the other hand, the butt end of the tree is put uppermost, the top of the post will decay, because the moisture of the atmosphere will penetrate the pores of the wood more rapidly in this position. Many people have noticed that the staves in a wooden tub appear to absorb moisture irregularly, some getting quite sodden while others are comparatively dry, and apparently almost impervious to moisture. In this case the dry staves are in the position in which the tree grew, while the saturated ones are reversed.

238 Terrible storm + tidal wave Dec 11 1894
Columbia — Santa Marta — Magdalena.
River — town of Lara has completely
disappeared, occurred Dec 7th Santa Marta
capital of Magdalena inundated by a tidal
wave washing over 1/3 houses + making
people take refuge in church steeples etc.

A VOLCANO IN SERIOUS ERUPTION

Ambrym, Just Once Still on Account of Volcano
3,500 Feet High, Has Now a
Crater 1,000 Feet Deep.

News — Dec 14 1894

The Herald published yesterday morning in a special despatch from Victoria, B. C., the news of the fearful catastrophe that has overtaken the island of Ambrym, one of the New Hebrides group, in the Southern Pacific. On November 13 an earthquake shock wrecked the island from east to west, causing the land, on which stood a small native village, to slip with the huts and their inhabitants into the sea.

The outbreak began on October 16, at an old crater in the centre of the island. The lava stream after the catastrophe extended from the center to near Dip Point, the western end of the island. The centre of the island is now a mass of lava. One stream was seen by H. M. Talbert to enter the sea on the morning of October 16, one mile east of Dip Point, and from it a column of smoke arose to a height of 4,000 feet. Some of the officers of the Dart inter viewed the crater which is nine miles in diameter and one thousand feet deep.

Ambrym is reached to present a portrait of the island as it appeared in the year 1888, when the volcano, then in activity, had a height of 3,500 feet. The picture is reproduced from the illustrated London News of July 5 of that year.

239. Look out for report of H M S. Dart on earthquake at Ambryn Oct 16 1894

240 Thought transference See 1894

Take three papers with Cross marked 1–100 one for Prima, Secn & superf — Take pack cards & I look at one & think qit & they both guess — I put down on my paper & they each do same but nothing said then compare notes. & see proportion of right answers

241 Same but without one seeing the card as that is purely chance

242 Read up on thought transference:-

(Aut. & Eng) Science July 1885 diagrams by Pickering — #12

S. P. R Vol 1 # 11 #13

Mac Millan Mag. Oct 1882 Mrs Warno #14 paper

Am. Jnl Cri Jurisp July 1897 Dr Baird #15 on Gotebridge

Revue Philosophique Aug 1882 Beaunis Hypnotism #19

Discovery of [illegible] Jour Psych Jan Feb Mar 1912 #16

Look up the 'Dial' Oct. 1849 W Adams — an Engl. publication pr by Sy. #17

Books to read.

243. #20. Perpetuum Mobile — 1861 8vo Burke

244 Books to read. Dec. 1894

(21) The true Blue Laws of Connecticut
Hartford 1876. J. H. Trumbull
Public Records of Ct. (1636) 3 Vol. Astor
A-Z 1888 3824 pages.

(22) Secrets of Art & Nature - by John Wecker
1660 not in my Astor Cat.

(23) An Inglorious Columbus - E. P. Vining
not in Astor Cat. N.Y. 1885

(24) The Pentateuch & Joshua critically examined by Bishop Colenso
Astor Lib. A to D 1886 page 826.

(25) Altruism & the Struggle for life - Lowell lectures H. Drummond.
not in Astor Cat.

(26) How to make photographs in pigments
Drummond - A. J. N.Y. 1868
Astor Lib. A to D 1886 p. 1049.

(27) Wilkins Concilia time of Henry VII
Report of Abbey of St Albans -
Astor Lib. but no good as it = Latin.

243. Probabilities — Dec 1894

Guessing Red or black in cutting cards — Cards shuffled each time

50 cuts — Guessed right 25 — wrong 25

Odd + even in 120 cards dealt in 12 at a time + then cards shuffled:
Odd. 68 even 52

Red + black. in 120 cards dealt in 12 at a time + then cards shuffled
Red 53 — Black. 67

120 Cards - 10 deals of 12 cards.
Hearts 26, Diamonds 27, Sp. 26, Clubs 41,
Average should be 30 — 30 — 30 — 30

244 Lennon's death
Got date of year 1894 + put in Hayden's dict.?

245 Cyr's death for Hayden's Dict.

246. Canals Got date of opening of Manchester Ship Canal, Corinth Canal } Hayden's dict.

247 Hell + Miracles — Dec 1894

Blackwood's —

Hell
21 — 549
19 — 489

Miracles
10 — 552
40 — 91
18 — 162
18 — 113
27 — 463
25 — 100
10 — 552

248. Apparitions Dec 1894

Blk. 3 – 705 ~~Vol 6 – 201~~ Vol 17 – 570
~~6 – 86~~ " 3 – 589 " 48 – 200
~~22 – 249~~ " 10 – 249 7 – 144
28 784 ~~27 – 462~~ 29 – 361
48 326 Cotton Mather

249 Ghosts. Dec 1894

Blk. ~~20 – 192~~ ~~Vol 35 – 859~~ Vol 3 – 189
26 555 " 18 432 " 13 – 705
29 717 " 5 13 " ~~20 – 107~~
21 482 " 48. 200. 42 584
12 761

250 Second Sight:- Dec 1894

Blackwood
Vol 3 – 18 ~~Vol 6 – 204~~
~~" 6 – 63~~ " 37. 260

251 Cases from Blackwood

Lieut Sheaine Vol 26 – 347 —
Mr Stiny " 44 – 797
John Shutton " 43 227
Col. Lonsend 46 592
Ulpian ~~36 – 49~~ murder.

Cases from Blackwood

Commentaries	Vol 1	61	
Smith the Murderer	" 15	679.	
Dr Sharp.	" 20	438	
Sellis	" 43	116	
Matthew Schum	" 2	437	
Mr Rusemube	21	208	murder
Robertson	~~24~~	~~700~~	Poacher
Redmond	13.	677	
Pearcans	13	678.	
Sam Patch	50	229	
~~Patch~~ Osma	41	586	murder

---

252 When binding new books remember:-

Electrical Engineer Vol VIII 1889 is only cover and index the reading is Vol IX 1890 — have this fixed. —

Eng. & Min Journal July to Dec 1891 has only got part of index see it

Eng & Min Journal Jan & June 1891 has no index

The above 3 are bound but want altering

253 Edison Gillilan ~~Controversy~~ Difference on Phonograph
1 Electrical Engineer Apl 16 1890, May 7. 1890.
2.

254 Brooks B. Notes & Q Dec 1894
There was a general index for Ser. 1-5
published in 5 Vol. in 3 8vo Squares.
Get it.

253' Brooks & Read Dec 1894

(28). A Century of Birmingham life - 1741-1841
John A. Langford - Simpkin Marshall 1868.

(29) Minerva Green (Sampson Low 1893)
1000 years hence

(30) George Wilson's 'Religio Chemici' 1862
Life of Wollaston

(31) Look up testimony of Bacaccum in Macaulay's essays.

256. Railroads (New) for maps
Biera Pungue R.R.? East & West Africa
When opened? Where it runs? etc
Columbian. R.R.

257 Edison Electric Railroads (Aug 7. 1895. 69

Jerome's letter in the Journal (Spring Boston Journal) dated Apl 16 1880. (Scrap. 1495) Edison gives Siemens credit for Railroad Elect. & then says that he supplies current to the Rails, & also says that the same current that supplies the machine can light the train also

Daily Graphic of July 27 has three cuts all showing lantern & one of them shows the lamp socket. (Scrap. 1573a)

Loco first put on about May 14 1880 & tried with breakage of friction occasionally up to 25 or so when it ran right along.

Left for Europe Feb. 5 1881. (1575 Scrap)

Left Liverpool May 12 1881 (1583 Scrap.

Edison in his testimony of infringement suit Chem. Siemens Field, System of Electro-Magnetic Railroading Tuesday Nov 22 1881 says & when asked to explain his Railroad that ~~he~~ had been ~~testified to~~ by himself & others as having ~~been~~ commenced running May 13 about 1880 ~~says~~ & then the Season says in describing it (The Locomotive etc page 89 at bottom

Same int: 192 p. Cl. Clarke says:—

258. Find place where Edison gives credit to Siemens for Electric Railway, before himself & enter it. Jennie's letter to Boston Journal Sept 1895

259. Mysterious Explosions:
Gas in an airpipe - J. P. Bayles. Eng. Vol 19. page 18.
Gas in a blower Letter p. 20 N
Gas in a gas purifier p. 21. B

260 Look up explosions in manhole boxes. in New York Streets 1880 – 1894.

261 Look up Vols 20 1891 – 1892
21 1892 – 1893
22 1893 – 1894
23 1894 – 1895
Trans Am. Min Engineers
& see if Bayles ever gave an explanation of the remarkable explosions that he described in Vol 19. page 18

262 The pig iron production of the United States for the last five years was as follows:—1890, 9,202,703; 1891, 8,279,870; 1892, 9,157,000; 1893, 7,124,502; 1894, 6,657,388. The production of 1893 decreased 22 per cent as compared with 1892, while that of 1894 decreased 6.5 per cent as compared with 1893. Jan 19 1895

Average for 5 years 8.084.292 tons

263 Books read or looked through Jan 1895 "

Wilson's Mag.

Blackwoods - Feb 1844.

---

264 Cretain for cheapwork in Brooklyn
at 20 tons per day. Jan 22 1895

15 tons scrap. at	(dol)	127.50
5 " Alice at		58.75
Fuel		22.00
Foreman		4.00
Night laborers		5.00
Office		15.00
Clipping		10.00
Shipping		40.00
Carting		4.00
Melter		2.50
" Laborers		3.50
Eng. Velset		6.50
Sand etc		5.00
Rent		5.00
Moulding		60.00
		368.75

20/368.75
18.44 per ton

price the pot $240
profit $4.00

265 Waste Substances Jan 26 1895

Their reclamations

1 — Scrap metals — Iron, brass, tin, zinc — Sheet tin: old tin cans — Platinum from Dec. Camps — copper — lead Iron turnings — Gold & silver sweepings

Get number Kerosene cans, Preserve cans ~~biscuit~~, biscuit, etc used in this country all these have all tin on when thrown away

266 Note for annual report of State Engineer Adams for fiscal year ending Sept 30 1894

267 Industrial Notes -

1 Shaping machine that cuts going backwards & takes a much larger cut without chattering than the other way

2 The use of grinding machines instead of lathes for many purposes

3 Speed of Laval turbine engine & dynamo at 30000 why cannot such a speed be utilized in some other fast running spindle work such as spinning etc

4 New method of pumping that I saw (at the Exhibition how it could be utilized

5 The fact that planing machines waste almost one half of the time makes them expensive for plain work & have much facilitated the use of face milling & revolving bed boring & turning machines for this work Whitworth made a machine that cut both ways - How many did he sell? Does he make them now? & are there any other makers in the market?

Jan 1895 76

6 The use of special lathes in doing work where many of the same kind have to be made has very much increased lately give samples of Fox lathe of 25 years ago, & some of the heavy monitors of today such as made by Matt Whitney & others — Give some data of Self acting screw mach. & their product in number.

7. The rise of drop forging — Billings & Spencer Williams of Brooklyn — M & Whitney — the extent of the business etc

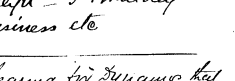
---

268. Design ~~and~~ bearing for Dynamos that will throw up the oil & filter & let down on shaft in a stream

---

268 Mechanical Motion

Rotary to reciprocating motion Lond Engineering Aug 1894



---

269 See Arts Aug 30 1892 Hyde Clarke suggests the use of the pneumatic tubes as a means of communication for short distances when the telegraph lines are down by stress of weather etc

Waste products
Utilization of animal refuse in Australia
Soc Arts Aug 9 1892
Artificial butter Soc Arts Sept 6 1892

240 Letter to Baelz, Dr. Lindgren Eng. Feb 5 1895
price of #41 Catalogue tools.

acc 1 year round	£ 6. 6. 0
#192	8. 0
314	11. 6
371	4. 0
452.	6. 0
	£ 7. 15. 6

10 % off & O.B. - will take them

241 Strength of Cast Iron. Feb 1895
I notice in Soc Arts June 13 1896 528 that a writer in a New York paper says that iron tested 30 days after casting stood 72 shockings
34 " " " " 84 "
100 " " " " 731 "
6 years " " " 2582 "
that iron cast over is very much stronger up to a certain number of fusions than the first casting Is this so??

242 Textbook on Gas Oil & air engines or internal combustion without boiler - Bryan Donkin jr London 1894
Chas Griffin & Co (Lond) £1/

273 Books
Mickey Overs & Sudbury John D. Prassard
Geo Philip & Son London price 2/.

274 Books
Freeland by Dr Hartzka about 1893

275 Doc Arts Ours commences 1853 now how were the transactions kept before that?

276 Books wanted from. London Feb 1895
Journal of the Society of Arts - London

Vol 38 Nov. 1889 to Nov 1890
" 39 " 1890 to " 1891
" 40 " 1891 to " 1892
" 41 " 1892 to " 1893
" 42 " 1893 to " 1894

Blackwood's Magazine - Edinburgh

Vol. 23 Jan to June 1828
" 26 July to Dec 1829
100 July to Dec 1866 OK. Got them
Index of Vol 51 - 100 inclusive
101 Jan to June 1867
102 July to Dec 1867 Aug 1896
103 Jan to June 1868
104 July to Dec 1868
105 Jan to June 1869
106 July to Dec 1869
107 Jan to June 1870

108	July to Dec	1870
109	Jan to J	1871
110	July to Dec	1871
111	Jan to J	1872
112	July to Dec	1872
113	Jan to June	1873
114	July to Dec	1873
115	Jan to June	1874
116	July to Dec	1874
117	Jan to J	1875
118	July to D	1875
119	Jan to J.	1876
120	July to Dec	1876
121	Jan to J	1877
122	July to Dec	1877
123	Jan to J	1878
124	July to Dec	1878
125	Jan to J	1879
126	July to Dec	1879
127	Jan to J	1880
128	July to Dec	1880
129	Jan to J	1881
130	July to Dec	1881
131	Jan to J	1882
132	July to Dec	1882
133	Jan to Ju	1883
134	July to Dec	1883
135	Jan to June	1884
136	July to Dec	1884

Ill got them Aug 1896 in London

137 Jan & June 1885
138 July & Dec 1885
139 Jan & June 1886
140 July & Dec 1886
141 Jan & Jun 1887
142 July & Dec 1887
143 Jan & Jun 1888
144 July & Dec 1888
145 Jan & Jn 1889
146 July & Dec 1889
147 Jan & Jn 1890
148 July & Dec 1890
149 Jan & Jn 1891
150 July & Dec 1891

Not these in Aug 1896

Index for Vol 101 & 158 inclusive

Corr. wrgly this on these

151 Jan & Jun 1892
152 Jul & Dec 1892
153 Jan & Jul 1893
154 July & Dec 1893
155 Jan & June 1894
156 Jul. & Dec 1894

Notes and Queries. A medium of intercommunication for literary men, general readers etc.

Any volumes bound or unbound included between Jan 1886 & present time

The Philosophical Magazine by
and Journal of Science ~~Alexander Tilloch~~

Series 1
Vol 21 – 1806 – London Taylor & Co
to Vol 68 – 1826 inclusive

Series 2
Vol 1 to 11 inclusive 1827 – 1832

Series 3.
Vol 30 Jan to June 1847
" 31
" 32
" 33
" 34
" 35
" 36
" 37 — 1850

Series 4 – Jan to June 1852
Vol 3 to 14 inclusive July to Dec 1857
" 16 to 50 " 1851 to 1875
July to Dec 1858

247 Card trick Feb 1895.

Eight Kings threatened to save nine fine
8 K 3 10 2 7 9 5

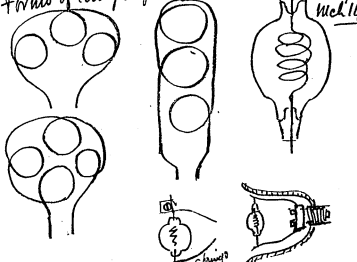
Ladies for one sick Knave.
2 4 1 6 Kn.

---

248 Look up Journal of Optician Society
Founded by Penn 1818 a descendant
of Wm Penn

---

249 Forms of lamps for effect + economy 1895 Mch 14.



280 Taxes 1894.

38 West 25th St.	496.	25
Mesnil	106	34
Glen of Park	30	58
Newark W. 6 & 2 Av.	5	44
" 144 Plane St	53	80
" Hamburgh Pl.	11	49
Fort Platist, Mich.	5	04
Schenectady	1	00
Tacoma	22	43
Brooklyn	35	00
	764	70

1895 Aet 23

281 It seems to me that it is frequently the case that when one discovery or great invention is made there is generally another follows close on it as for instance

Argon and Helium by Rayleigh & Ramsey new elements

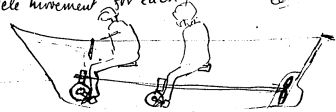
Telephone by Bell & Phonograph by Edison both in Acoustics

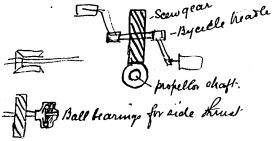
This is probably owing to the fact that a new line of thought has set many minds to work independently & each following his own ideas arrives at different results

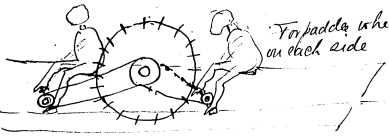
Look up more cases.

282. Pleasure Boat

Bicycle movement for each person June 28 1895 @13.







Compressed air could be used with small engine on propeller — Air to be compressed at home and put in cylinders all along under seat and if it run out two or three hand pumps to compress again to be able to get home

Work this out: a boat 30 feet long could have 50 feet of 12" cylinder or about 3½ cubic feet cap

May 1895 83

283 Launch motor

Some successful trials are reported as being made in various places with the new nautical motor by which any boat, say from ten to eighteen feet long, can be transformed into an electric launch without any alterations, simply by screwing to the stern of the craft a fitting similar to a rowlock plate, the motor being attachable at once and easily. From the tip of the tiller to the screw the equipment for this purpose, as explained, is 3½ feet long. About 18 inches of this length, consisting of the motor, controlling lever and tiller, are inboard of the sternpost, that part which runs outboard being simply a nickel-plated two-inch shaft tube, the weight thirty-five pounds, and the battery for running being from seventy-five to two hundred and seventy-five pounds, the weight varying with the choice of a primary or storage battery. The two-bladed screw is of ten inches diameter, and, just forward of this on the shaft tube, there is located a steering fin, both motor and steering gear being thus combined in the same machine. By means of this arrangement from one-third to one-half an electric horse power is developed with four four-cell batteries giving twenty-six volts, and, as stated, from three to five miles an hour is the result, according to load and resistance.

284 Effect of moon on tides

The following is given in brief as the theory most generally entertained by scientists, with a few exceptions, concerning tides: It is assumed that the moon, acting alone, would not only raise a wave on the side of the earth nearest to it by gravitation, but would also draw the earth itself far enough out of its course to leave behind some of the water on the further side, which water would then be raised relatively to the earth's surface and constitute the second tidal wave; the sun alone would act similarly, although its tide-raising effect is only about two-fifths that of the moon. Now, at new moon, the sun and moon "pull together" and give higher tides than at the first and third quarters, when the sun draws its right angles to the line of the moon's attraction, and, at full moon, when the sun is on the opposite side of the earth from the moon; virtually the same effect is observed as at new moon; but the double tideraising action of the sun would again be super-imposed on that of the moon and give tides on opposite sides as high as those a fortnight before.

285 Bicycle.

This bicycle craze is a craze indeed. Men, women and children have taken to the wheel, and it is dangerous to cross the streets. I have just heard of a country church fair, and for what purpose was it gotten up, do you think? Why, to buy the pastor a bicycle. Now, I shall be called a rank heretic, and some of you will be indignant enough to throw paving stones at me, but, in very truth, the bicycle is a clumsy and ungainly affair. Of course the crazy people will deny this, but they know it to be true, nevertheless, even in their craziest moments. What then? Well it will soon give way to something better. It is well enough as a stepping stone, but as a resting place it would be deplorable. It will be evolved into a horseless carriage, driven by electricity, and it won't be ten years, perhaps not five, before it will give way to a vehicle that will be safe, will go at great speed, and be comely to look upon. Then we shall look at the present bicycle as a frog looks at a tadpole. Pardon, a thousand pardons, but those burning thoughts must have vent.

250 Words

	Letters	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
Feb 8. 1891	1220	93	20	46	49	155	28	22	65	92	0	3	41	36	87	82	32	1	83	76	129	41	3	29		25	2	Tribune Editorial — Times of Latrine —
July 15 1895	1161	78	15	39	36	56	30	16	78	73	1	2	37	22	89	100	32	2	74	72	118	40	2	14	5	21	0	Herald Editorial — Relief for Ireland
Sept 2 1898	1129	92	21	29	45	150	27	21	65	69	1	7	39	20	66	90	18	2	70	65	110	42	16	27	1	27	3	Herald. New Blood hero

284. Electric Light — May 1895 25

May 20 1853 – One of the Citizen steamers went from Chelsea to Gravesend at 9 pm. with an electric light on each paddle box. See Arts 1853 p. 323.

See London papers about this date

---

288. Inventions — May 95

See Arts Vol 2

---

289. See when United Service Journal (1829) started and stopped.

---

290 Mechanical motions.

R. Webster gravity escapement

See Arts 10. 443

---

291 Platinum light. See Arts. 1870 Vol 18. p. 553 Platinum in H. and Carb.ic Oxide gives a light 26% better than Gas.

X

292 Platinum Elect. Light

Silliman's Journal 2d Ser. 4. 1847

Mr Draper's exp. on heat & light from Pt. Also Phil. Mag May 1847.

X

Also
Salem, Mass. Observer Nov 2 1878.
Note - See if you can find any paper that gives account of July 1869 at Salem Mass of exh.^n at M. G. Farmer's house. - See Boston papers of that date.

July 1895

298. Incan.^t Lamp.
A. Lodyguin - Petersburgh -
Carbon conductor in glass globe for lamp. See Russian paper Colos. #220. May 11-23 1893 - trans.^d in Sci. Am. Aug 22. 1893 Vol. 21
H. H. Whalen in Sci. Am. Apl 11 1893. 398
Dayo:
Patent (Eng) 10919. Nov 4 1845 is to King (C. C.) see it!!!
1848. Staite tried inc.^t irritium in Globe.
1850 Mollet. Incand.^t Carbon in an exhausted globe and driven by magneto.
1852. Martin (J. Roberts) Graphite in exhausted glass globe.
See Telegraphic Journal Vol 7. 119 apl. 1. 1879. Hadek's idea of using carbon for incandescence in place of any thing else.

203 Cont'd

See Phil. Trans. of Roy. Soc.

164 (1874) page 501
165 1875 " 519
166 1876 " 316
169 1878 " 244

See also. Lydal Heal as a mode of Ignition 4th Ed. 428-9. on Jet Burners.

See also U.S. Pat. 211,262.
Sawyer & Mann Jan 7 1879

See also. Telegraphic Journal London Jan 1 1878. Article on State of Elect. Rl. — I think he talks all about arc & does not consider incandescence of sufficient importance to mention it.

See also:- U.S. Pat. Sawyer granted 1877 Aug 14 & filed June 27 — another a week later Aug 21 1877 Elect. Lamp or Burner.

Also see:- U.S. Pat. 196,834 Nov 6 1877 Sawyer. Also see. 196,111
Also see. 205,144 Sym. June 1878.

Also See 205,303 June 5 1878
& 205,305 " 25 1878

Also See:- N.Y. Sun Sept 11 1878
" " " " 16 "
" " Tribune " 28 "

Also See:- Report of Secy of Navy Washington

Cont.
1876 p. 161 Rept. of Chief. of U.S. & Sec of Navy.

Also see:- N. Y. Herald Oct 12, 1878.
Also see Scribner's Mthly Feb 1880 p. 534 Upton.

Also see:- Edison's patents
Apl 1879. 214 636
" " 214 637
Aug 26 1879. 218 866

Also see:- N. Y. Sun Nov 25. 1878

Also See Maxim Pat. U.S. 247 380
Sept 30 1881

Also See Interference Maxim Vs Edison
Maxim 247 380
Edison 214 636
current regulations 1881

Also See Herald Dec 11 1878
Commr. Advertiser Nov 23 1878
N. Y. World Dec 23 1879
N. Y. Sun Nov 25 1878.
N. Y. Herald Nov 22 1878
(Barker's article)

Also See: Lane Fox (Eng Pat) 3988. 1878
(High resistance in Camps)

Also See:- Ed. 227 229. May 4. 1880
Appl. for Apl 21st

Also See 'Engineering' Apl 19. 1878.
(Crooks experiments.)

Cont'd.

See also. Evidence of Mann & Church in Int.e S & M. Vs Edison

See also:- N.Y. Times Mch 19 1878 Sawyer Patents

See also:- U.S. Patent 211262 S. & M. Jan 7 1879.

See also: N.Y. Eve. Post Oct 30, 1878 Scientific Am.n Dec 7 1878. S. Amp N.Y. Herald Dec 21 1879.

Also:- Edison filed Dec 11 1879 pat. for paper carbon

See also:- N.Y. Herald Mch 25, 1880 Barker's figures

See also:- Journ.l Franklin Inst. Phil. Mch 24. 1880 Barker's lecture

See also:- Sci.c Am.n Apl 17 1880. Investigation of lamp by Morton Mayer & Thomas Also Vol. NS. 42. p. 243.

See also:- N.Y. Sun June 14 1880

See also ~~U.S. Pat~~ Soc. of Arts. Dec 8 1886. Weber article Hydrocarbon treatment

See also:- Sci. Journal & Elect. Review 19. p. 593.

See also. Eng. Pat 4847. 1878. Cheseborough. for Sawyer Mann treatment

See also:- N.Y. Event Pat Nov 12, 1880.

Cont. = 1879 July 1895 89

See also. Electrotechnische Zeitschrift
Nov & Dec 1885 on Flashing

See also Swan patents in O.G.:-
233445 Oct 19 1880
234346 Nov 9. 1880 these are all
up to July 27. 1882

See also. fundamental pat. for Edison for Lamps
223898 Jan 27. 1880
227279 May 4 1880
230225 July 20 1880

See also what Swan claims July 28 1882 at
the preliminary hearing before Mr Justice
Chitty. London.

See also.- Royal Society 1848. June Siemens
platinum burner.

See also: Farmer's letter to Wilde Manchester
Philosophl. Soc. About Oct. 1866

Look up also. Gardner & Bloxom Regual Lamps
plat. wire -- previous to 1865

Look up also King & Staite & others — Carbon bars
in sealed globes previous to 1865

Look up Kabloff's experiments

Also read up.- Present State of Electric Lighting
James N. Shoolbred before Brit. Ass.
Aug 1848.

Also. Gas illumination. Dr W. Wallace — See Ass.
Vol 24 Jan 31. 1849.

204 Butler in Hayden's D'c

Deaths. Edmund H Yates May 20 1894
Oliver Wendell Holmes Oct 7 1894
John Lothrop Motley May 29 1877
Brigham Young. 29 1877
Victor Emanuel II Jan 9 1878
Pius IX Feb. 7 1878
Earl Russell Born 1792 died May 28 1878
Prof. Henry May 13 1878
OK Photo ~~W. C. Bryant.~~ ~~June 12 1878~~
Prince L. Napoleon June 1 1879
Jules Favre Jan 20 1880
Czar Alex. II Mch 13 1881
Pres Garfield July 19 1881
Gen Garibaldi June 2. 1882
" Skobeloff. July 7. 1882
Leon Gambetta ~~Jan 1 1883.~~
Leon Kennett Mch 24 1894

Richard A Proctor Born		died
Dr Werner Siemens	"	"
Sir Wm Siemens	"	
Robert L. Stephenson	"	Dec 3 1894
John Tyndall	"	
Alfred Russell Wallace	"	
Charles Darwin	"	
Jas Ant. Froude	"	
Sir H. Bessemer	"	
Sir R. Burton	"	
Wm Fairbairn	"	
Prof Helmholtz Herman F.	"	Sept 8 1894
Prof Huxley	"	June 24 1895
Brown Sequard		Apr 2 1894
Ferd De Lesseps		Dec 7 1894

Sept 1895 91

295 Books to read, -- about Inventors

'The Impregnable City' by William Pembertn
Dodd Mead & Co. N.Y.

'Actual Africa or the Coming Continent'
by Frank Vincent -- D. Appleton & Co. N.Y.

'Social Diseases & worse remedies'
Rev. Hussey

'Sarat Chandra Das. 1881 on Thibet

'Atavism & Evolution by Prof. Lombroso.

'Aerial Navigation' by Salvendia

Hubert's Inventors Ok Sept 1895 at Poughkeepsie Library

Apparitions & Thought Transference Podmore

Remarkable inventions Bakewell F.C.S. N.Y. 1860
8° Ok Sept 1895 at Poughkeepsie Library

Beckmann John. Inventions discoveries and
origins Lond. 1846. 2v 12° Ok Sept 1895 at Poughkeepsie Library

Library of Amer. Biography 1839-1848 25 Vols
Look this up for inventions J. Sparks editor

'Our Living representative men' 1860 J. Savage.

Representative men of N^d & S^th 1874
Rogers A. C.

Biography of eminent Am^n Persons 1857
B. J. Lossing

Lives of Eminent Ind^s celebrated in Am^n history 3 v. 1847 T. H. W. Edelen

---

Lives of Eminent Literary & Scientific men of America 1850 Wynne J.

Biographies of Scientific men 2 v.
F. Arago.

Mem. of Am^n Mechanics; Lives of European mechanics 1841. H. Howe

---

Lives of eminent literary & scient^c men of early Cyl. Britain 1840 (Anon)

Industrial biography, iron workers and tool makers 1864 Smiles Sam.

Biographies of self-taught men 1832
" " " " " 1859
B. B. Edwards.

Curiosities of human nature 58 Biog^l Sketch, 1845 Goodrich S. G.

Mem. of Celebrated Characters 2 v. 1854
A. De Lamartine.

Biographical sketches 1869.
H. Martineau

Biographical Sketches, 1863 Senior N.W.

Self made men 1858. Seymour C.C.13.

Pioneers' Biog. Sket. of leaders in various paths 1861 A. L. Simpson.

Wonderful characters 1854 Henry Wilson

Life of R. Fulton N.Y. 1817. C.D. Colden

Tapetum mobile London 1861 12° H. Dircks

Triumphs of invention & discovery 1861 12°
Life J. H. OK Sept 1875

Mem. of Amer Mech N.Y. 1841 12°
Henry Howe

Life of James Watt. N.Y. 1857. 12° J.P. Muirhead

Penny Cyclopedia of the Soc. for the diff. of useful Knowledge Vol 1 1833 & others London 4°
OK gotu

Penny Magazine London Vol 1 1832.

Million of facts N.Y. 1836. 12° Phillips Sir R.

Life of Geo Stephenson Boston 1858 Smiles Sam

Steam & Engines. London & N.Y. 1856. 12°
Routledge R.

Story of inventions of Steel pens. N.Y. 1890. 16°
Bore Henry

Inventions and devices 1578 Wm Bourne

Century of Inventions ~~Marquis of Worcester~~

296 Books to be sought for information! — Sept 1895

Canals of the U.S. by H.S. Tanner.

A Voyage down the Amoor. 1860. N.Y. 12°
Perry M. Collins

Our first century — 100 events Springfield
1878. 8°. R. M. Devens.

Coal, petroleum, & other dist. Oils. N.Y.
1865. 8°. Abraham Gesner.

Letters on Animal magnetism Phila 1851
12° Wm Gregory.

'Animal Magn: or Physochodunamy. N.Y.
1846 12°. Fher Leger.

History of a mouthful of bread. 1868. 12°
Jean Macé

Repository of entertaining & useful reading
N.Y. 1843 16°—

Human Voice James Rush Phila 1833 8°

Magic of the middle ages. – Transl. by A.H. Edgren N.Y. 1879. Victor Rydberg.

Philosophy of magic – trans.d by A.J. Thompson 2 vol. London 1846. 8°
Eusebe Salverte

Economy of mach. & manufac. 1832. 16°
Char Babbage

Animal Magnetism Alfred Binet & Charcot N.Y. 1888. 12°.

Dictionary of Miracles Phil.a 1885 12°
E. C. Brewer

19 Cent. Miracles N.Y. 1884. 8°
Emma H. Britten

Leviathan London 1886. 12°. Thos Hobbes

Microcosmus N.Y. 1886 2 vol in 1 8°
Herman Lotze

Hypnotism N.Y. 1890. 12°
Albert Moll.

Reconstruction of Europe N.Y. 1890. 12°
Harold. Murdock

Gatter. on Coal gas by W Clegg carefully in the Centuries

pamphlet 1816. Prospectus of a company "a Natural Light & heat a 97 Patent" demonstrated by the patentee Wm Winsor

Sept 1895

294 Large building stones & blocks.

Ruins of Baalbec — Dulthin or three stones temple so called from three blocks of ~~such~~ the remarkable dimensions namely:—

64' X 13' & presumably square
63'8" X 13' "
63' X 13

These have been raised 20 feet from ground Enc. Brit - 9th Edn reprint. Vol 3 p. 147.

Mark Twain in his 'Innocents abroad' says that one block still remains in the quarry near the above temple & of measures 14' X 14' X 70 feet less a few inches — at 168# per cubic foot = or 1400 tons

298 To fill on cracked hard wood floors:
= Paper pulp and fine sawdust boiled together for hours & minced with glue dissolved in linseed oil — Put in & leave until partly dry then cover with wax & smooth off with hot iron

Sept 1895.

Sept 1895 97

299 Hoosac Tunnel —
Sci Am^n Sept 21 1895 says:- "No message has ever been able to have reached down through the tunnel 4½ miles long but they have been an over tunnel [illegible] In working the tunnel they found no metal or [illegible] North Adams is plugged at [illegible] this of course is quite singular — find out cause —

300 Lucy transatlantic Steam Eng^ing
Sam. Ward Stanton's paper in Engineering for Sept 1895 — extracts of it in Sci Am^n Sept 21 1895

301 XIX Century 50¢ per month London
Sampson Low Marston & Co
Leonard Scott pub. Co. New York

302 Books to get. Oct 1895
"Mesmerism Spiritualism etc" by Dr Carpenter.

Hypnotism by Ernest Hart.

303. Oct 19. 1895
Fix Rosa's lights — Skin the plug on one side gone in cellar as Emma's lights are gone also on one side.
OK, Oct 25 1895

304 Put rubbers on shutters in front basement Screw them on. Oct 19 1895

305 Fire dumb waiter Oct 20 1895

306 Pin for hands of clock in dining room Oct 21 1895

307 Buc But. 1878 & 1888 Vol 1 & Vol 23. Scribner's

308 New York Notes. Oct 21 1895

The cable on Lexington Ave was started and cars run for first time Sunday Oct. 13 95

The 9th Av. Elevated road commenced to run by cable — July 2d 1867

dits by locomotive — —

The 6th Ave by Ives. —

the 3 Ave by " — —

the 2 " " " —

The Lenox Ave line by underground trolley from opened July 9 1895 but cars had been run before that all everything O.K. Scrap.

309 To make a continuous diary to go with Pepys + Evelyn Get: —

Court of Louis 14th by St Simon

Civil wars of the Fronde by Cardinal Retz.

Charles the 1st by Lucy Hutchinson

Charles II by Clarendon and Pepys.

George II by Lord Hervey

" " Horace Walpole

Geo III by Madame D'Arblay
Geo IV + Wm IV by Greville

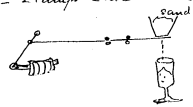
Nov 1895

310 See
Mr. Borchers – Experiments on the utilization of the Chemical Energy of Carbon as Electricity – Beibl Vol 19 No 4 p. 346
What journal ???

Nov 1895

311 Try the effect of rubbing Aluminium, Magnesium Cadmium & Zinc on clean glass

312 Electric Meter (copied from old paper) Nov 1895
Oct 18 1890 – Ampere meter works series of strokes – 1 lamp opens one hole + the other runs – 2 lamp 2 holes + so on



Quantity in glass measure work alone.

313 Alloy for vessels that acid + alkaline solution are put in

Copper	15. pts
Tin	2.54
Lead	1.82
Antimony	1.00 g.

Copied from old paper Feb. 21 1899

314 Bunge dip. Nov 1895

Bath Muriatic Acid	3 oz.
Nitric "	1 oz.
Chloride Iron	1 oz.
Arsenic	1 oz.

When dissolved add Water 1 oz.

---

315 Bunge dip – Muriatic Acid 5 oz.
Nitric " 2 oz.
Powdered Cobalt 1 oz.

Nov 1895

316. Reader Bound in Cupboard #1
for 33 Phil Mag
Vol 34 Philosophical Mag —
" 35 " "
" 36 " "
" 37 " "
" 38 " "
" 39 " "

Vol 1 Cassiers Mag.
" 2 " "
" 3 " "
" 4 " "
" 5 " "

Vol 6 Cassier's Mag.
" 8 " "

Vol 13 Scribner's Mag. Want title page + index
Vol 14 " " " " "
Vol 9 " " Jan + June 91.

Index Journal Lel Eng. London. Vol 11 & 20.
Vol 22 " "
" 23 " "
" 21 " "

Vol 17 Cosmopolitan Mag.
" 18 " "

Vol 12 Murray's Magazine

Vol 1 Quarterly Illustrator

See #334

102

31. New York Real estate prices

1 [redacted] W. 76th St. #21 Nov. 1895 $62.500

3

2 The most interesting private transactions embraced property near Herald square. Brooke & George sold for Archibald D. Russell the four story brown stone front building, on lot 25x98.9 feet, which he bought recently for $63,000, for $74,000; and for Jane L. Brooke No. 38 West Thirty-second street, a four story building, 20.8x98.9 feet, for $66,500. William Hall's Sons purchased for $56,000, both houses, the purchaser, who purchased for a long term of years on No. 39 West Thirty-second street, and he leases from Addison Cammock No. 40 West Thirty-second street, and Nos. 39 and 41 West Thirty-first street.

William Hall's Sons purchased for $56,000, from the Coleman estate, the block front, on the west side of Lexington avenue, between Ninety-seventh and Ninety-eighth streets, 25.10x105. The same firm of builders bought the east front of the avenue between the same streets last week.

Lexington Ave.

38 West 32nd $66,500

3 [redacted] Nov 8. 72 W 36. $45.000

4 Colonel Edward A. McAlpin yesterday made one of the most advantageous sales yet concluded in the district to the south of Herald square, which has been so active recently. He sold, through J. Romaine Brown & Co., to Andrew J. Conniff, No. 3 West Twenty-ninth street, a four story dwelling on lot 25x98.9, for $90,000. Mr. Conniff will probably alter the property for business purposes.

Nov 27 1895 9 W 29th St 25x98.9. $90.000

5 McIlvile Langdon sold to a Mr. Ashe No. 44 East Seventy-sixth street, a four story brown stone front dwelling, on lot 20x102 feet, for about $32,500.

Charles Griffith Moses sold for Florentine

Nov 27 1895 44 E. 76th St 20x102. $32.500

Letters

Edison 351 – 417 – 448 – 469.
Israel 352 – 460 – 464 – 466 – 467 – 469 – 471 – 472 –
Couch 353.
P M R B 354. 395 – 403. 413. 416. 440. 458.
Wallington 355 – 415 – 446. 459
Passions 364.
C C Campbell 365 –
Vanicelen 368. 372.
Keasby 369 – 396 – 458
Steinberg T M 373. 382 – 456
Wallis 378 –
Atwood 379 –
Kruesi 380. 423. 426. 451
Fryer Cole. 381.
Ord. 395. 399. 412.
Newark Water works 389.
Sam Meyer 394. 419. 421.
Wm. Beach Club House 397 – 448 –
Woody. Sam'l 404
Rly. Ward 411
Carlincen Redak 410
Taylor 425
Wurdes Rd. 430. 439
Thomas Dotson 429
Shaw Ball 427 – 436.
Stanham
Sel tric } 434
J H. Wood. 433.
Cornish 435
John K Wallace 441.
Rd. A. W. Cooley 442.
De Remer 447 – 462 – 463 – 468 – 470 – 472.
Sotheran 449
Wm St Ry 450
Aug Kruesi 452
Pierce 454.
Hammer 454
Adg Lopez 456

Bureau Statistics 457.
Zylon 461.